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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/486,012	05/15/2000	SIMON J. FENNEY	R&GCASE305	3729

7590 07/16/2002  
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KALAMAZOO, MI 49008-1699

EXAMINER

CAO, HUEDUNG X

ART UNIT	PAPER NUMBER
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2671

DATE MAILED: 07/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/486,012

Applicant(s)

FENNEY, SIMON J.

Examiner

Huedung X Cao

Art Unit

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 May 2000.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-15 and 17 is/are rejected.
- 7) ☒ Claim(s) 8, 9 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 17 is objected to because of the following informalities: in claim 17, a term “method” should be changed to “apparatus”. Appropriate correction is required.
2. Claims 8, 9, and 16 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent can not depend on another multiple dependent claims. See MPEP § 608.01(n). Accordingly, the claims 8, 9, and 16 not been further treated on the merits.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7, 10-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasawa (US 6,061,065).

As per claim 1, teaches a method for shading a three dimensional textured computer graphic image comprising the steps of:

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providing data defining the three dimensional computer graphic image (Nagasawa, col. 2, lines 26-29);

providing a set of surface normal vectors corresponding to the texture data for the image wherein the surface normal vectors are stored in a local coordinate system (Nagasawa, col. 6, lines 28-30);

providing data defining at least one light source and its direction illuminating the image wherein the light source is defined in the same local coordinate system (Nagasawa, col. 4, lines 25-44);

for each pixel in the image, deriving a shading value to be applied to that pixel from the set of surface normal vectors and the light source data which Nagasawa does not explicitly disclose. However, Nagasawa's surface shade becomes manifest when the reflection of the scattered light is increased implies the step of deriving a shading value as claimed (Nagasawa, col. 5, lines 41-42) . Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to derive a shading value to be applied to that pixel in order to render the surfaces in the graphics display image of a three dimensional object by taking into account surface characteristics and position with respect to light sources.

Claim 2 add into claim 1, in which the surface normal vectors are stored in polar coordinates (Nagasawa, col. 1, line 66-col. 2, line 7)).

Claim 3 adds into claim 1, in which the light source data is stored in polar coordinates (Nagasawa, col. 6, line 20-col. 7, line 24).

Claim 4 adds into claim 1, in which the step of deriving a shading value to be applied to a pixel comprises deriving a color value and a blending value from the light source data and

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combining this color value with existing color data from that pixel in dependence on the blending value (Nagasawa, col. , lines 20-27).

Claim 5 adds into claim 1, in which the surface normal vector is stored in Cartesian coordinates (Nagasawa, col. 7, lines 10-24).

Claim 6 adds into claim 1, in which the light source data is stored in Cartesian coordinates (Nagasawa, col. 6, lines 5-27).

Claim 7 adds into claim 5, in which for each surface normal only two of the Cartesian coordinates are stored (Nagasawa, col. 7, lines 10-24).

Claims 10-15, and 17 claim an apparatus based on a method of claims 1-7; therefore, they are rejected under a same reason.

*Inquires*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Huedung Cao** whose telephone number is **(703) 308-5024**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Mark Zimmerman**, can be reached at **(703) 305-9798**.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231


**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Huedung Cao  
Patent Examiner

  
**CLIFF N. VO**  
PRIMARY EXAMINER